UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 09/518,452 | 03/03/2000 | Robert Jeff Heath | PD-980182 | 7634 |

20991 7590 06/13/2003

HUGHES ELECTRONICS CORPORATION
PATENT DOCKET ADMINISTRATION
BLDG 001 M/S A109
P O BOX 956
EL SEGUNDO, CA 902450956

| EXAMINER |
|---|
| JUNTIMA, NITTAYA |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2663 | 7 |

DATE MAILED: 06/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 09/518,452 | HEATH, ROBERT JEFF | |
| | Examiner | Art Unit | |
| | Nittaya Juntima | 2663 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *03 March 2000* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-47* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *16* is/are allowed.

6)☒ Claim(s) *1-15,17-19,21-31,33-40 and 42-47* is/are rejected.

7)☒ Claim(s) *20,32 and 41* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *03 March 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *3,4,6* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

## DETAILED ACTION

1. Pre-amendment, paper number 5, dated May 3, 2000 was not entered due to incorrect pages and line numbers provided for changes in the specification. A new amendment with correct pages and line numbers is required for the changes on specification to be entered correctly.

### *Claim Objections*

2. Claims 2, 5, 10-12, 15-18, 20, 23, 28, 30, 33, 37, 39, 42, and 47 are objected to because of the following informalities:

- claim 2, line 2, "ordering" should be changed to "reordering;"
- claim 5, lines 9 and 10, "one of" and "and," respectively, should be changed to "either" and "or," respectively, as a channel cannot be allocated as both a contention channel and a data channel;
- claim 10, lines 2 and 3, "request" and "subsequent," respectively, should be changed to "requests" and "subsequently," respectively;
- claim 11, line 5, "one of" and "and" should be changed to "either" and "or;"
- claim 12, line 5, "rate," "one of," and "and" should be changed to "volume," "either," and "or," respectively;
- claim 15, line 5, "one of" should be deleted,

  line 6; "for" should be added between "requests" and "said," and "has"

should be replaced with "have;"

- claim 16, line 8, "one of," "and," and "channel" should be changed to "either," "or," and "channels," respectively;

- claim 17, line 1, "the steps of" should be added after "comprising;"

- claim 18, line 2, "one of" and "and" should be changed to "either" and "or," respectively;

- claim 20, line 2, "the steps of" should be added after "comprising;"

- claim 23, line 2, "one of at least" should be deleted, and

line 4, "and" should be changed to "or;"

- claim 28, line 2, "one of" and "and" should be changed to "either" and "or," respectively;

- claim 30, line 2, "at least one of" and "and" should be changed to "either" and "or," respectively, as the same bandwidth request cannot be allocated as both a rate request and a volume request;

- claim 33, line 4, "superceding" should be changed to "superseding;"

- claims 37 and 47, lines 1-2, "at least one of" and "and" should be changed to "either" and "or," respectively, as the same channel cannot be allocated as both a data channel and a contention channel;

- claim 39, lines 1-2, "at least one of" and "and" should be changed to "either" and "or," respectively; and

- claim 42, line 3, "process" should be changed to "processor."

Appropriate correction is required.

*Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1-4** are rejected under 35 U.S.C. 102(b) as being anticipated by an art of record, Natarajan (USPN 5,699,355).

Per **claim 1**, Natarajan teaches ***a satellite terminal*** (Fig. 1, a satellite subscriber unit 30 or a ground station 40), ***a satellite*** (Fig. 1, satellite 20), ***providing the satellite terminal with at least one command*** (a control message) ***that allocates to the satellite terminal a number of timeslots within each of at least one frame for data transmission*** (Fig. 4, col. 5, lines 64-67-col. 6, lines 1-10, and see also col. 4, lines 28-col. 5), ***the command identifying the number of allocated timeslots in a first order according to a timeslot reordering scheme*** (a first order and a timeslot reordering scheme are not defined, therefore, read on a contiguous order and contiguous/incontiguous reordering scheme, respectively, col. 5, lines 39-48, therefore, it is inherent that the number of timeslots assignment in a control message sent to the subscriber unit can be in a contiguous format, e.g. timeslots 0, 1, 2, and 3), and ***converting the timeslots identified by the command to corresponding timeslot locations within each frame in a second order*** (a second order is not defined, therefore, reads on the first order, e.g. a contiguous order) ***in accordance with the timeslot reordering scheme to distribute the allocated timeslots throughout each frame*** (as indicated on col. 6, lines 5-10 that the subscriber unit will transmit

data according to the control information, therefore, it is inherent that the subscriber unit would have to convert the timeslots, e.g. 0, 1, 2, and 3, in the received control message into the corresponding timeslot locations within a frame in a second order (a contiguous order), which are timeslots 0,1, 2, and 3, prior to transmitting the data to the satellite).

Per **claim 2**, Natarajan teaches ***selecting the timeslot reordering scheme to distribute data from respective satellite terminals to different timeslots throughout each frame*** (the satellite can select whether to assign timeslots for respective satellite terminals in contiguous or incontiguous order, col. 5, lines 39-48).

Per **claim 3**, it is inherent that converting step is performed by the satellite terminal in order to properly transmit the data in the assigned timeslots, col. 5, lines 64-67-col. 6, lines 1-10).

Per **claim 4**, as shown in Fig. 4, Natarajan teaches ***receiving a request for bandwidth*** (step 102), ***processing the request to determine an allocation of timeslots within each frame*** (steps 104-114), ***generating the command to indicate the timeslots allocated the satellite terminal in the first order with timeslot reordering scheme*** (steps 116 and 118), and ***transmitting the command to satellite terminal*** (step 120) (col. 4, lines 42-col. 6, lines 1-10).

**Claims 17-19, 21-22, 26-29, 31, 33, 34-38, 40, 42-43,** and **45-47** are rejected under 35 U.S.C. 102(b) as being anticipated by Montpetit (USPN 6,078,577).

Per **claims 17** and **29,** Montpetit teaches ***(claim 17 only) receiving a bandwidth request*** (a bandwidth allocation request with specified a required amount of bandwidth which inherently corresponds to a desired number of timeslots (transmission slots) in a frame, col. 10, lines 39-61, see also col. 7, lines 49-63) ***from a terminal*** (a ground terminal) ***over a communication channel***

(a contention channel) (col. 10, lines 1-5), ***determining allocation of the transmission slots of the frame based upon the received bandwidth request*** (col. 9, lines 40-47, see also col. 15, lines 8-67-col. 16, lines 1-45), ***distributing the allocated transmission slots through the frame according o a prescribed sequence*** (a prescribed sequence is not defined, therefore reads on contiguous order, timeslots are allocated in contiguous order on the bandwidth allocation table, Fig. 7, col. 14, lines 4-36), ***(claim 17 only) selectively sending an allocation command*** (a bandwidth allocation response) ***identifying the allocated transmission slots to the terminal based upon the distributing step*** (a bandwidth allocation response along with allocated transmission slots is sent to the requesting ground terminal, col. 11, lines 4-27 and col. 17, lines 15-30), ***(claim 29 only) transmitting a bandwidth request*** (a bandwidth allocation request with specified a required amount of bandwidth which inherently corresponds to a desired number of timeslots (transmission slots) in a frame, col. 10, lines 39-61, see also col. 7, lines 49-63) ***to a satellite*** (the servicing satellite) ***over a communication channel*** (a contention channel) (col. 10, lines 1-5), ***(claim 29 only) receiving an allocation command from the satellite*** (a bandwidth allocation response is sent from the satellite to the requesting ground station, col. 11, lines 4-11).

Per **claims 18, 30,** and **39,** Montpetit teaches ***the bandwidth request is either a rate request*** (col. 8, lines 6-10 and col. 10, lines 44-47) ***which specifies a constant number of transmission slots*** (col. 7, lines 64-67-col. 8, lines 1-13) ***or a volume request which specifies a specific number of transmission slots*** (col. 8, lines 32-48).

Per **claims 19, 31,** and **40**, Montpetit teaches ***(claim 19 only) receiving a follow-up from the terminal*** (the satellite receives bandwidth request for an additional data packet associated with the volume-based from the ground terminal requesting to obtain uplink bandwidth, col. 9,

lines 53-67), and ***selectively discarding the follow-up request based upon traffic load*** (the bandwidth request is inherently discarded by the BAP of the satellite after a predetermined time period expires, col. 16, lines 29-45, see also col. 8, lines 42-48), ***(claim 31 only) transmitting a follow-up request to the satellite*** (the ground terminal receives additional data packet associated with the volume-based and submits a bandwidth request to the satellite to obtain uplink bandwidth, col. 9, lines 53-67), ***(claim 40 only) a follow-up request from the terminal is stored in one the plurality of queues*** (the satellite inherently stores a bandwidth request for an additional data packet associated with the volume-based from the ground terminal requesting to obtain uplink bandwidth in one of the queues of OBC, col. 9, lines 53-67 and col. 13, lines 34-41).

Per **claims 21** and **33**, Montpetit teaches ***placing the rate request in a queue*** (rate request may be placed in one of the queues of an onboard computer queue, OBC, 79 in Fig. 10, col. 13, lines 37-41), ***receiving another rate bandwidth request associated with a fallback*** (a fallback is not defined, reads on a new rate request with higher priority), ***(claim 21 only) discarding the queued rate request and (claim 33 only) superseding the original rate request*** (preemption, col. 13, lines 49-52).

Per **claims 22, 34,** and **43**, Montpetit teaches that ***the rate request and the volume request each has two levels of priority*** (the volume request has high and low priorities, and it is inherent that the rate request can also have to two level of priority; high and low priorities, col. 8, lines 48-58).

Per **claim 26**, Montpetit teaches ***receiving another bandwidth request from the terminal, the other bandwidth request*** (the other bandwidth request is not defined, reads on a bandwidth

having higher priority) ***being received using a previously allocated transmission slot*** (preemption, col. 13, lines 49-52).

Per **claims 27, 36**, and **46**, Montpetit teaches ***the frame is a TDMA*** (Fig. 7, col. 7, lines 49-63).

Per **claims 28**, **37**, and **47**, Montpetit teaches ***the communication channel is either a data channel or a contention channel*** (a contention channel, col. 10, lines 1-5).

Per **claim 35**, Montpetit teaches ***piggybacking a follow-up request to the satellite*** (ground station sends a bandwidth request, which inherently specifies additional desired transmission slots, for an additional data packet associated with the volume-based to the satellite to obtain uplink bandwidth, col. 9, lines 53-67 and col. 10, lines 29-38).

Per **claim 38**, Montpetit teaches ***a plurality of queues configured to store a bandwidth request*** (a bandwidth allocation request with specified a required amount of bandwidth which inherently corresponds to a desired number of timeslots (transmission slots) in a frame, col. 10, lines 39-61, see also col. 7, lines 49-63) ***received from a terminal over a communication channel*** (a bandwidth request is stored in one of the multiple queues in an onboard computer queue, OBC, 79 in Fig. 10, col. 13, lines 29-30 and 34-41), ***a bandwidth control processor communicating with the plurality of queues*** (a bandwidth allocation processor, BAP, 85 in Fig. 10, col. 13, lines 28-34 and 37-41), ***the bandwidth control processor being configured to determine allocation of the transmission slots of the frame based upon a received bandwidth request that is stored in one the plurality of queues*** (col. 9, lines 40-47, see also col. 15, lines 8-67-col. 16, lines 1-45), ***to distribute the allocated transmission slots throughout the frame according to a prescribed sequence*** (a prescribed sequence is not defined, therefore reads on

contiguous order, timeslots are allocated in contiguous order on the bandwidth allocation table, Fig. 7, col. 14, lines 4-36), and ***to selectively send an allocation command identifying the allocated transmission slots to the terminal*** (a bandwidth allocation response along with allocated transmission slots is sent to the requesting ground terminal, col. 11, lines 4-27 and col. 17, lines 15-30).

Per **claim 42**, Montpetit teaches that ***the plurality of queues store at least two rate requests*** (rate requests may be stored in the queues of an onboard computer queue, OBC, 79 in Fig. 10, col. 8, lines 6-10 and col. 10, lines 44-47 and col. 13, lines 37-41)***; an original rate request*** (not defined, reads on rate request with lower priority) ***and a fallback rate request*** (not defined, therefore, reads on rate request with higher priority), ***the bandwidth control processor*** (BAP 85) ***discarding the original rate request*** (preemption, col. 13, lines 44-52).

Per **claim 45**, Montpetit teaches that the plurality of queues store another bandwidth request from the terminal (a new bandwidth request from the ground terminal is received and stored in the OBC queue 79, col. 9, lines 53-67, Fig. 10 and col. 13, lines 37-41) the other bandwidth request being received using a previously allocated transmission slot (preemption, col. 13, lines 44-52).

## *Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

**Claims 5-15, 23-25,** and **44** are rejected under 35 U.S.C. 103(a) as being unpatentable over Montpetit (USPN 6,366,761 B1).

Per **claim** 5, Montpetit teaches ***a processor*** (a bandwidth allocation processing unit generates allocation bandwidth responses (commands) that allocate a plurality of channels (as known in the art that a satellite can have a plurality of channels for data transmission) among terminals, col. 9, lines 40-52 and 63-67 - col. 10, lines 1-5 and 9-28), ***terminals*** (ground terminals, 21a-d, Fig. 3, col. 4, lines 54-64 and col. 11, lines 4-20), ***a receiver and a transmitter*** (the bandwidth allocation processor onboard a LEO satellite in a bandwidth-on-demand apparatus receives bandwidth requests from and transmits bandwidth allocation responses to the ground terminals, therefore, it is inherent that the apparatus must include a transmitter and a receiver to perform the transmitting and receiving functions, col. 3, lines 13-23), ***a contention channel*** (a channel for allowing terminals to transmit bandwidth requests, col. 10, lines 9-17), ***a data channel*** (a channel for allowing ground terminals to transmit allocated bandwidth (terminal traffic), col. 10, lines 1-5), ***the processor allocates each of the channels as either a contention channel and a data channel*** (it is inherent that the processor can allocated each of its channels as either a data channel or a contention channel, col. 10, lines 1-5).

However, Montpetit fails to teach that the processor dynamically changing the allocation of channels depending on an amount of bandwidth requests pending at any given time.

It would have been obvious to one skilled in the art to enable the processor to dynamically change the allocation of channels according to an amount of bandwidth requests pending at any given time so that varying bandwidth requests can be properly accommodated to

increase the efficiency and flexibility of the apparatus (see also col. 13, lines 65-67-col. 14, lines 3 and 18, lines 19-22 and 34-42).

Per **claim 6**, Montpetit teaches ***a plurality of queues connected to the processor*** (an onboard computer queue 79, OBC, where the processor writes to, reads from, and inherently stores the bandwidth requests as part of bandwidth allocation processing, further the processor inherently allocates data channels in accordance with the bandwidth requests stored in the queues to properly accommodate the bandwidth requirements according to the assigned priorities, Fig. 10, col. 13, lines 28-41 and col. 16, lines 29-39).

Per **claim 7**, Montpetit teaches that ***the channels*** (data and contention channels as described in claim 5) ***correspond to timeslots in frames*** (Fig. 7 and col. 7, lines 41-63), ***the processor allocates the timeslots accordingly to the bandwidth requests and a bandwidth allocation algorithm*** (the programmable bandwidth allocation rules), ***and generates the commands accordingly*** (col. 9, lines 40-42 and col. 13, lines 42-67-col. 14, lines 1-3, and col. 11, lines 4-9), and ***the terminals processes the commands and use the timeslots accordingly*** (col. 11, lines 16-19).

Per **claim 8**, although Montpetit fails to teach the minimum number of contention channels, it would have been obvious to one skilled in the art to configure the contention channels at a minimum number to provide more data channels in order to support more of scheduled and higher priority traffic which require successful delivery and generate more revenue.

Per **claim 9**, Montpetit teaches that ***the processor generates and transmits a signal*** (a bandwidth allocation response) ***via the transmitter to one of the terminals indicating that a***

***channel release request has been processed*** (the bandwidth allocation response is generated and by the BAP and transmitted via the satellite transmitter to the terminal requesting for a bandwidth deallocation that the request has been processed, col. 10, lines 55-61, col. 17, lines 15-20, and 48-58), but fails to teach a timer.

However, it would have been obvious to one skilled in the art to include a timer in the requesting terminal and program the terminal to wait until the timer expires before transmitting another one of the bandwidth requests to ensure that the bandwidth deallocation request previously submitted is successfully received and processed as part of transmission error control as known in the art.

Per **claim 10**, Montpetit teaches that ***one of the terminals transmits a bandwidth request via a contention channel*** (when determined that the ground terminal does not have an existing bandwidth allocation, col. 10, lines 14-28 and col. 11, lines 4-19), ***receiving channel allocations in response to the bandwidth request*** (receiving a response allocating bandwidth, col. 10, lines 17-28), and ***inband messages via allocated data channels*** (the ground station sends the bandwidth allocation request inherently via allocated data channels in a case when it already has an existing bandwidth allocation for transmission of other data packets, col. 10, lines 29-38).

However, Montpetit does not explicitly teach that the terminal transmits other bandwidth requests as inband messages via allocated data channels following a receipt of channel allocation response.

It would have been obvious to one skilled in the art to modify the apparatus such that it would allow the terminal to transmit subsequent bandwidth requests as inband messages via allocated data channels following a receipt of channel allocations response to ensure that the first

bandwidth request transmitted via the contention channel is successfully received and processed and that the requested bandwidth is allocated so that the subsequent requests can piggy backed within a data packet using allocated transmission to avoid contention problems (col. 10, lines 17-28).

Per **claim 11**, Montpetit teaches ***a bandwidth on demand communication system*** (col. 3, lines 13-14, and see also Figs. 3 and 10), ***channels*** (inherently correspond to data channel for scheduled data transmission and contention channel for unscheduled data transmission and bandwidth request transmission), ***correspond to timeslots in frames*** (Fig. 7 and col. 7, lines 41-63 and col. 10, lines 1-5), ***the bandwidth requests comprising rate requests*** (col. 8, lines 6-10 and col. 10, lines 44-47), ***the rate request is a request for a selected number of timeslots in each frame*** (col. 7, lines 64-67-col. 8, lines 1-13), ***a rate request is characterized as either high priority or low priority*** (a rate request is characterized as high priority, col. 9, lines 5-12, see also col. 6, lines 3-14 and col. 5, lines 43-61), ***terminals*** (ground terminals 21a-d in Fig. 3, and col. 10, lines 1-5), ***a processing device for providing channel allocations*** (the bandwidth allocation processor 85, BAP, Fig. 10, col. 9, lines 40-42, and col. 13, lines 32-34), **a *first queue and a second queue*** (multiple queues in an onboard computer queue 79, OBC, as shown in Fig. 10 can be provided, therefore, first queue and second queue are inherently provided to store high priority rate requests and low priority rate requests, respectively, col. 13, liens 28-29 and 34-41, see also col. 6, lines 3-46), ***allocating number of timeslots in each frame to the first and second queues accordingly*** (col. 13, lines 37-41), ***the sum of the number of the timeslots in each frame not exceeding a total number of timeslots in a frame*** (col. 16, lines 46-67-col. 17, lines 1-20), ***allocation to the second queue being preempted for at least one frame by allocation to the rate***

***requests in the first queue*** (lower priority queue is preempted in favor of higher priority queue, col. 13, lines 49-52 and col. 16, lines 10-21).

Montpetit fails to teach that the processing device comprises a first queue and a second queue (queues in OBC 79 in Fig. 10). However, it would have been obvious to one skilled in the art to incorporate a first queue and a second queue (OBC 79) into a processing device (the bandwidth allocation processor 85, BAP) for fast queue transaction without altering the functions of the OBC 79, i.e. proving memory accessible to other onboard processors.

Per **claim 12**, Montpetit teaches that ***bandwidth requests comprise volume requests*** (since volume-based bandwidth allocation can be provided, therefore, it is inherent that volume requests can be submitted as part of bandwidth requests, col. 9, lines 48-58), ***volume requests correspond to a request for number of timeslots to send an amount of terminal traffic*** (col. 8, lines 32-48), ***the terminal traffic comprising at least one of data, audio, and video*** (col. 2, lines 26-40), ***the volume requests are characterized as either high priority or low priority*** (col. 8, lines 48-58), ***low priority requests being preempted by high priority requests*** (col. 13, lines 49-52 and col. 16, lines 10-21).

Montpetit fails to teach that the processing device comprises a third queue and a fourth queue and volume requests being preempted. However, it would have been obvious to one skilled in the art to incorporate a third queue and a fourth queue (OBC 79 in Fig. 10, and col. 13, liens 28-29 and 34-41, and see also see also col. 6, lines 3-46) into a processing device (the bandwidth allocation processor 85, BAP) to accommodate the respective high and low volume requests and apply the preemption to the high and low volume requests in the third and fourth queues to favor volume requests with high priority.

Per **claim 13**, Montpetit teaches preemption (lower priority queue is preempted in favor of higher priority queue, col. 13, lines 49-52 and col. 16, lines 10-21), but fails to teach that the volume requests in the fourth queue are preempted for at least one frame by allocation of timeslots to at least one of rate requests in the first queue, the second queues, and the third queue.

However, it would have been obvious to one skilled the art to modify the processing device (the bandwidth allocation processor 85, BAP) such that it would allow the volume requests in the fourth queue which have the lowest priority among the queues to be preempted for at least one frame by allocation of the first, second, and third queue to favor traffic having higher priorities (col. 13, lines 49-52).

Per **claims 14** and **24**, although Montpetit fails to teach that the volume requests are allocated on a round-robin basis, it would have been obvious to one skilled in the art to program the processing device (the bandwidth allocation processor 85, BAP, see also col. 13, lines 65-67-col. 14, lines 1-3) to allocate the timeslots in each frame to the volume requests in third and fourth queues on a round-robin basis to take advantages of equal and orderly allocations as know in the art.

Per **claim 15**, Montpetit teaches providing a volume-based bandwidth allocation with portions of the request satisfied over a number of frames (col. 8, lines 42-48, see also col. 16, lines 29-45), therefore, it is inherent that the processing device can assign the timeslots to as many of the volume requests stored in the third and fourth queues and continue to store the volume requests in respective queues until the requests for the bandwidth have all been allocated.

Per **claim 23**, Montpetit teaches placing the bandwidth request in a queue (col. 13, lines 37-41) and volume-based bandwidth allocation is inherently has lower priority than that of rate-

based bandwidth allocation as it is preferably allocated on an all-or-nothing basis (col. 8, lines 54-58), but fails to teach that the queue being designated as a high priority rate request queue, a low priority rate request queue, a high priority volume request queue, or a low priority request queue, wherein the rate request queues are of higher priority than the volume request queues.

However, it would have been obvious to one skilled in the art to accordingly provide a queue to each of the respective rate requests and volume requests and enable the rate queues to have higher priority than the volume request queues so that the bandwidth can be efficiently allocated according to the assigned priorities (col. 13, lines 37-41).

Per **claim 25**, Montpetit does not teach reserving a minimum number of transmission slots for the low priority volume request queue. However, it would have been obvious to one skilled in the art to reserving a minimum number of transmission slots for the low priority volume request queue which has the lowest priority among the queues to allow the requests in other queues with higher priority to be allocated in order ensure QoS of those queues and generate more revenue.

Per **claim 44**, Montpetit teaches placing the bandwidth request in a queue (col. 13, lines 37-41) and volume-based bandwidth allocation is inherently has lower priority than that of rate-based bandwidth allocation as it is preferably allocated on an all-or-nothing basis (col. 8, lines 54-58), but fails to teach that the queue being designated as a high priority rate request queue, a low priority rate request queue, a high priority volume request queue, or a low priority request queue, wherein the rate request queues are of higher priority than the volume request queues.

However, it would have been obvious to one skilled in the art to accordingly provide a queue to each of the respective rate requests and volume requests and enable the rate queues to

have higher priority than the volume request queues so that the bandwidth can be efficiently allocated according to the assigned priorities (col. 13, lines 37-41).

Further, Montpetit also fails to teach (i) that the volume requests are allocated on a round-robin basis and (ii) reserving a minimum number of transmission slots for the low priority volume request queue. However, it would have been obvious to one skilled in the art to enable the system to (i) allocate the timeslots in each frame to the volume requests in third and fourth queues on a round-robin basis to take advantages of equal and orderly allocations as know in the art and to (ii) reserving a minimum number of transmission slots for the low priority volume request queue which has the lowest priority among the queues to allow the requests in other queues with higher priority to be allocated in order ensure QoS of those queues and generate more revenue.

***Allowable Subject Matter***

5. Claim 16 is allowed. The cited prior arts fail to teach or make obvious on the following:

- transmitting said contention channels in adjacent and isolated said uplink cells as cofrequency channels to reduce interference of said contention channels with said data channels.

6. Claims 20, 32, 41 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nittaya Juntima whose telephone number is 703-306-4821. The examiner can normally be reached on Monday through Friday, 8:00 A.M - 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chau Nguyen can be reached on 703-308-5340. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-9408 for regular communications and 703-827-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Nittaya Juntima
June 9, 2003

CHAU NGUYEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600